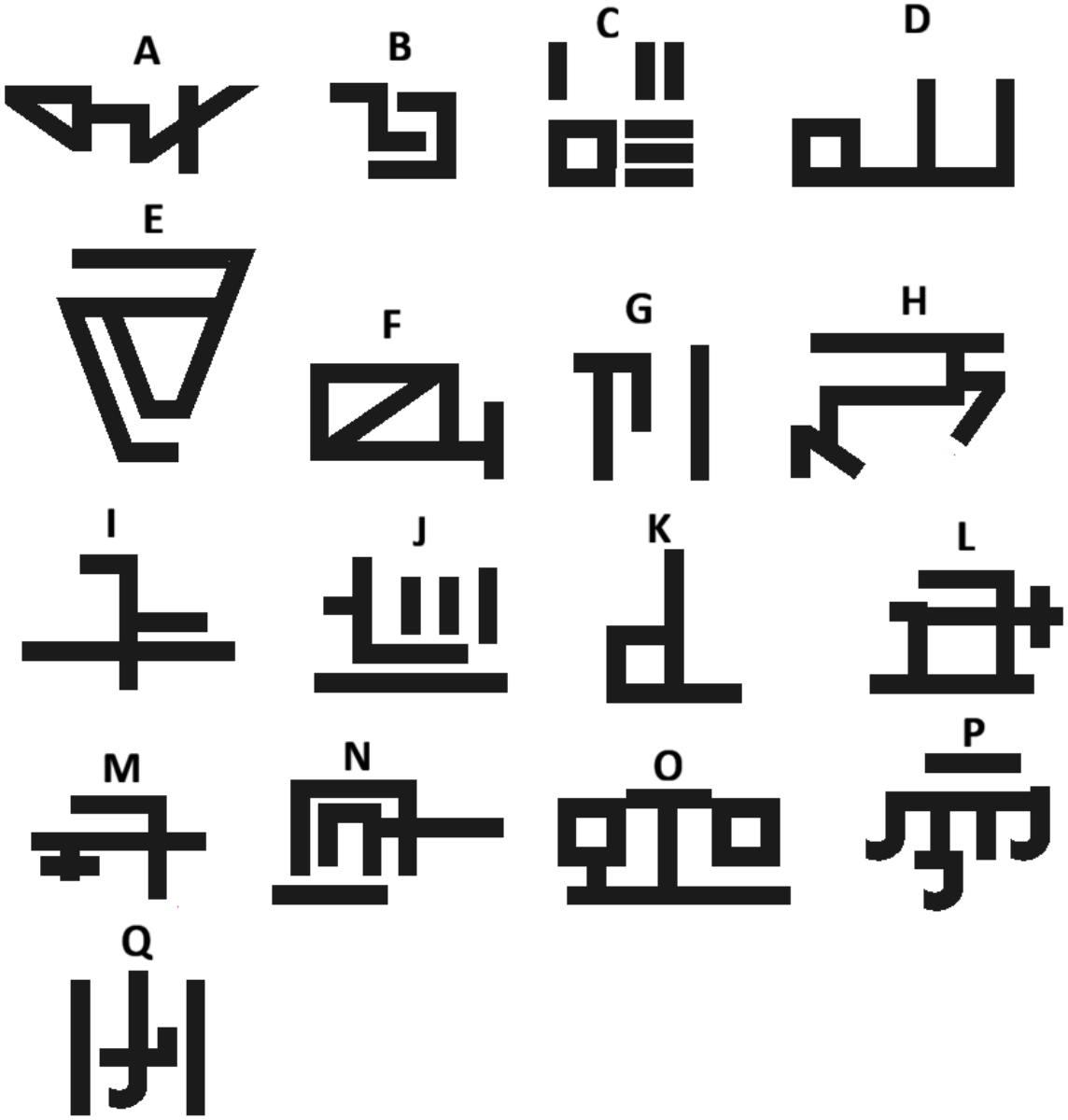
Algebraic Glyphs, by Nicholas W. Bochenek, 27th April 2026

Abstract
I present a system of glyphs that can be incorporated into logical discussions, such as mathematics. The glyphs can replace commonly used points of discussion by broadening the scope of commonly used symbols, as well as open the door for new interpretations, either practical or impractical. I show how the glyphs can be used to create new mathematical structures with a great degree of freedom, with the possibility (but not requirement) of these new structures matching known logical structures such as known equations, with the process named 'glyph condensation', and how glyph condensation is a property of perspective, blurring the line between practical and impractical.

Pretty pictures of glyphs



The first image is an imagining of some potential glyphs to use. The assignment of any one glyph to any usage is absolutely arbitrary, so the numbering chosen here doesn't need to be used anywhere else. I began with some common uses for the glyphs, such as variables and functions, then created

some abstract uses with no specific meaning, all up to interpretation. The reader could just as easily assign their own uses to the glyphs (or to their own home-made glyphs).
Here is my list of arbitrary glyph assignment: A) variable/number/object, B) function, C) equivalences, D) undefined, E) chaos, F) firework, G) separation (e.g. brackets or new paragraph), H) concealing properties from a concept, I) changing properties of a concept, J) logical construct (such as group properties), K) incorrect/mistake exists, L) observation, M) exploration, N) mush/fluid, O) network, P) abstract, Q) unassigned placeholder.
I will go through a few potential interpretations of glyphs and why they are effective in these scenarios.

Glyphs as mathematical objects (e.g. variables)

Glyphs can be used to represent mathematical objects such as numbers, variables, sets, matrices and so on. To avoid running out of glyphs for notation, I use the same glyph each time a mathematical object occurs, including different objects within the same context. This means that each instance of a glyph can have a different meaning (crudely speaking you could call it variable variables). If solving for glyphs, the glyph can be replaced with the specific mathematical object once solved, much like replacing x=2 once solving the equation 3*x=6. A practical example of using this system could be as follows: a short playlist of 5 songs is produced as a subset of songs from a longer playlist, such as carefully choosing songs from an album with other songs removed. Much information was lost (for example, all songs were merged into one large track so the individual song lengths as well as names are lost) but the total length is known. One could then solve for which songs are in the playlist by knowing that the addition of 5 unknown song lengths gives a specific length, which would usually only have one solution (but not always). Each song length could be represented with a mathematical object glyph as we don't know which songs they are. Also, with the possibility of multiple solutions adding to the specific short playlist length, we avoid using ordered notation for each song (such as t1, t2, t3, t4, t5), and use glyphs which can inhabit new values each time they appear, with the order not necessarily known. The exact method of solving is irrelevant. Using the glyph in this case is both for having multiple solutions and for unknown order of mathematical objects, where usually those aspects would be explained with sentences.

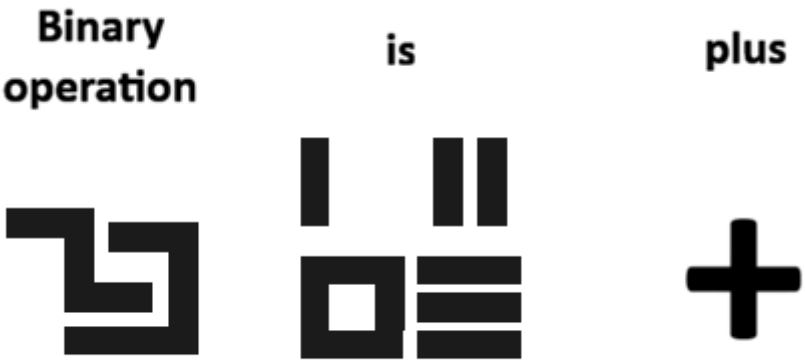
Glyphs as functions (e.g. sine, addition)

There were times during my study of projectile motion that I identified trigonometric problems, but did not know which trigonometric function was the correct one for the scenario, only the input and output values. I would write 'trg' as a placeholder for either sin, cos or tan, and using the provided numbers like this example:
trg(0)=0, trg(90)=1, so on. In this case, trg appears to behave like the sine function, although writing trg=sin has a notation issue that would most certainly unsettle a great many mathematicians. Roughly speaking, the function is being 'solved for', somewhat like a variable. We may associate a glyph with the unknown function.
Another example can be seen in the foundations of formal quantum mechanics, where there is a leap of faith in deciding to linearly add together wave vectors to create the total (check wording) wave function. In a way, we solve for the binary operation and our result is vector addition, although if you are uncomfortable stating that a glyph equals addition (or just *=+ where * is the unknown binary operation), then continue reading.

Glyphs as equivalences (e.g. equals sign)

In a group theory course I did at university, I would often see the teacher write an equals sign with a question mark above it, indicating that we didn't yet know the equality held, and we needed to investigate. This also occurred with isomorphism or equivalence class problems, so we are suggesting a glyph to represent an unknown analysis between two things. This could also be readily applied to whole number-valued sides to an equation where we want to know if one side is

potentially greater than, equal to or less than the other side. The glyph could be written until more clarity is found. It could also be left as a glyph if we're using it as a comparison rather than an equality, or if it doesn't fit the equivalence class axioms. An example of the glyph being used as a comparison is in the previous section on glyphs as functions, where we state that the binary operation is addition, and the word 'is' would be kept as the 'equivalence' glyph. This is another example of replacing words and sentences with symbols, but soon we will see the natural extension that comes from having such glyphs, in a later section about new structures.



Glyphs as chaos (e.g. forecast uncertainties or double pendulum)

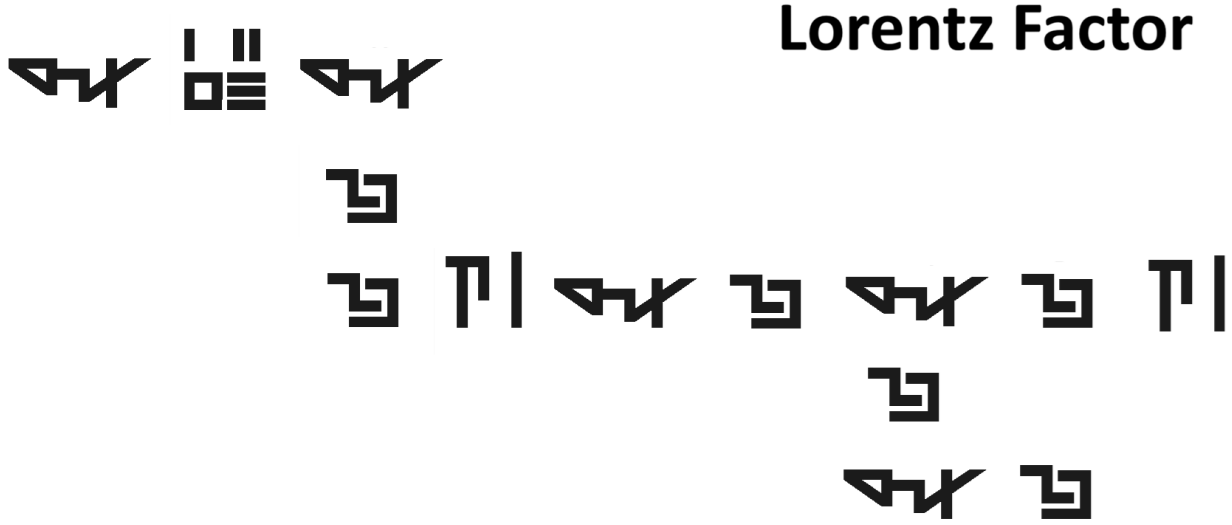
If you were to do some statistical mathematics relating to the forecasting of weather, there would always be uncertainty for forecast data, due to the chaotic nature of weather. You could potentially use a glyph to denote chaotic uncertainty for a short-hand way of stating unknown variability. The glyph could replace the Greek capital letter delta (for uncertainty) as well as replace the ~ symbol (for approximately equal).

For more basic chaotic motion, such as a swinging double-pendulum, a glyph could be used to denote the location or velocity of one of the pendulum endpoints after time has elapsed, leaving it as an unknown variable that had chaotic motion development from its initial conditions, but within physical confines. The reader could make creative examples for other uses of the glyphs.

Pretty pictures of known structures

$$\gamma = \frac{t'}{\sqrt{\left(1 - \frac{v^2}{c^2}\right)}}$$

Lorentz Factor



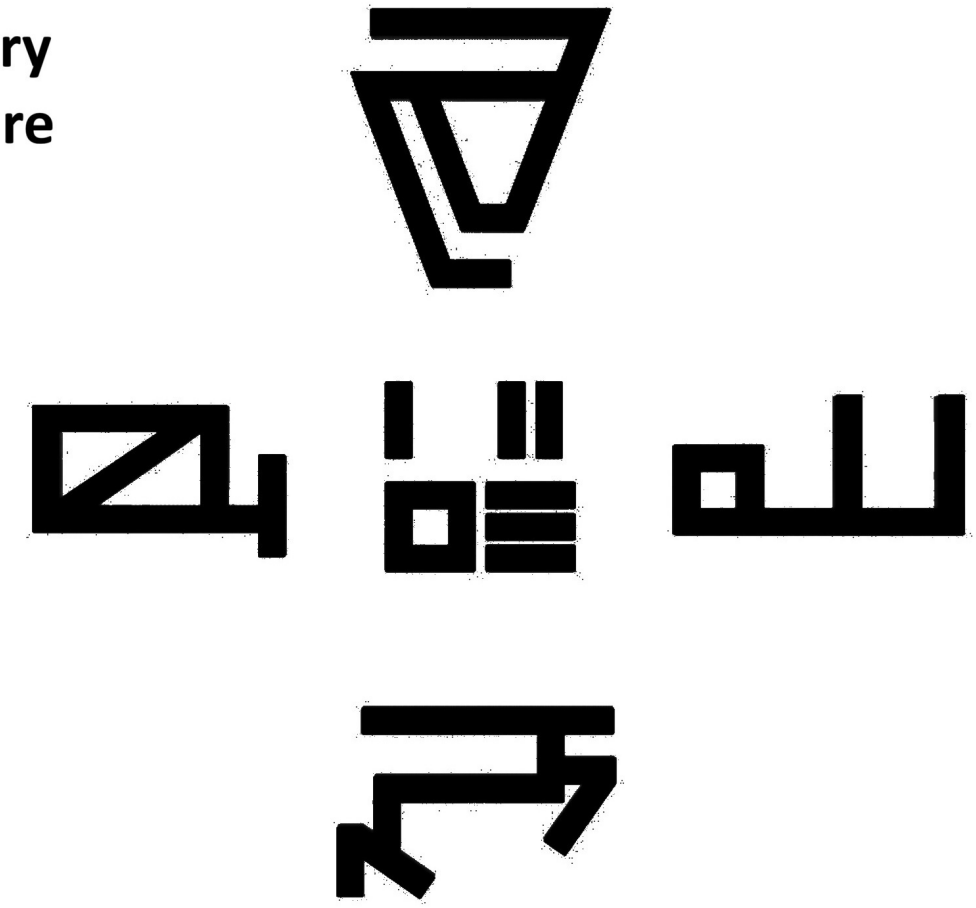
Philosophy of what we're doing

What is a glyph structure? Well, what is anything? Imagine that all human spoken languages could be contained on an island, with dictionaries, thesauruses and other books that use words to describe words. This is a self-consistent system that makes sense from its own perspective, i.e. a sentence makes sense in its own language in an isolated, self-consistent grammatical system. Now consider a different island, with other languages created by a separate life form with no influence from human spoken languages. They would most likely have an independent system (unless by pure coincidence they created an identical system) which would have some different structures and contents. There may be parallels to our languages when describing universe-wide phenomena, such as the need for resources or the concepts of pain and damage, and there would most likely be new concepts that cannot be translated into human languages. Even within human languages alone, there are words that cannot translate to certain other languages, such as trying to translate the Japanese word 'yūgen' into English. The glyph system I present here takes this approach of broadening conceptual understanding of language, and applies it to logical systems such as mathematics. It is possible to create new structures of glyphs that don't translate into pre-existing logic. It is also possible to create structures with the same shape and form as known logic, such as writing Newton's second law of motion (F=ma) and substituting each symbol with a glyph. Conversely, converting a glyph structure into a previously known structure I call 'glyph condensation'. It can be noted that it isn't always obvious whether or not glyph condensation occurs, such as in the writing of a glyph structure that matches an undiscovered mathematical equation. It can also be noted that glyph condensation can have many forms, i.e. F=ma would look the same as p=mv in glyph form. I hope to be able to create new such structures to condensate into consistent mathematics, yet even without glyph condensation, the beauty remains.

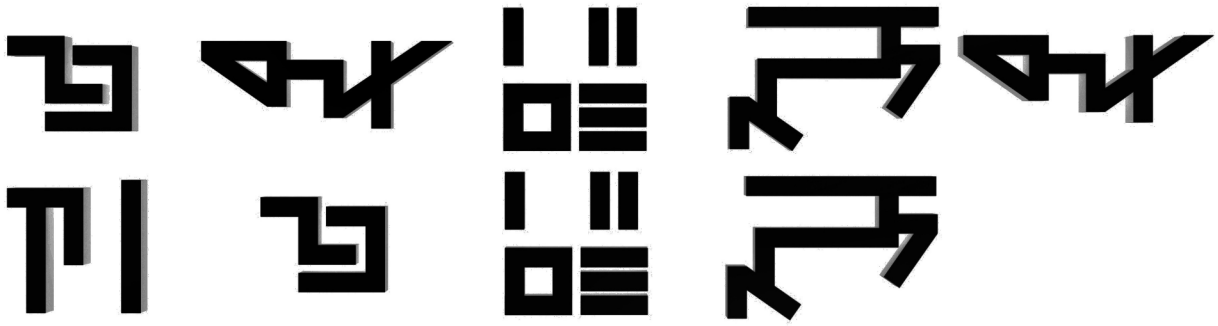
Pretty pictures of new structures

We can create new types of knowledge - see the attached images each labelled 'arbitrary structure'. No explanation is required from me for these new structures, as the reader can use their creativity when observing them. The reader is also encouraged to create their own glyph structures.

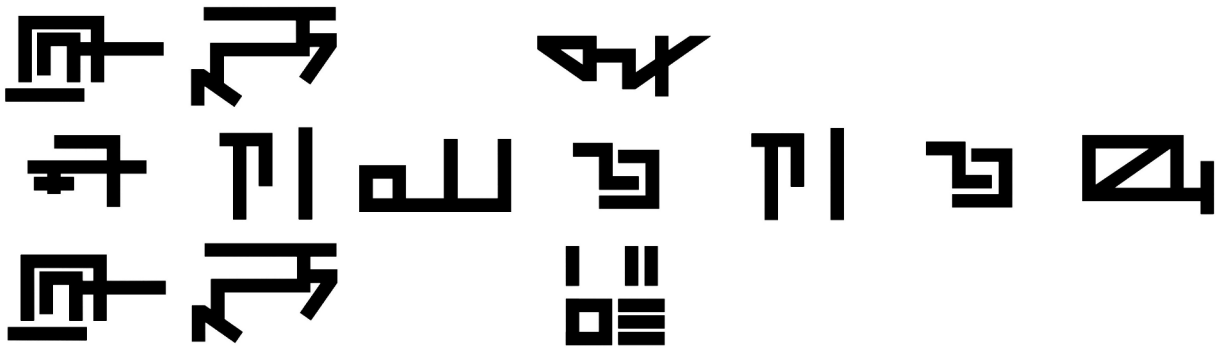
Arbitrary Structure



Arbitrary Structure



Arbitrary Structure



Conclusion and Further Thoughts

Many experiences are self-evident purposes. Perhaps you have witnessed a musical performance or art piece that cannot be explained in terms of anything else you know, yet you can still experience it. In conjunction with avant-garde art and the expansion of thought beyond the 'island' of everything we understand, we have shown a method for increasing our ability to generate new logic.